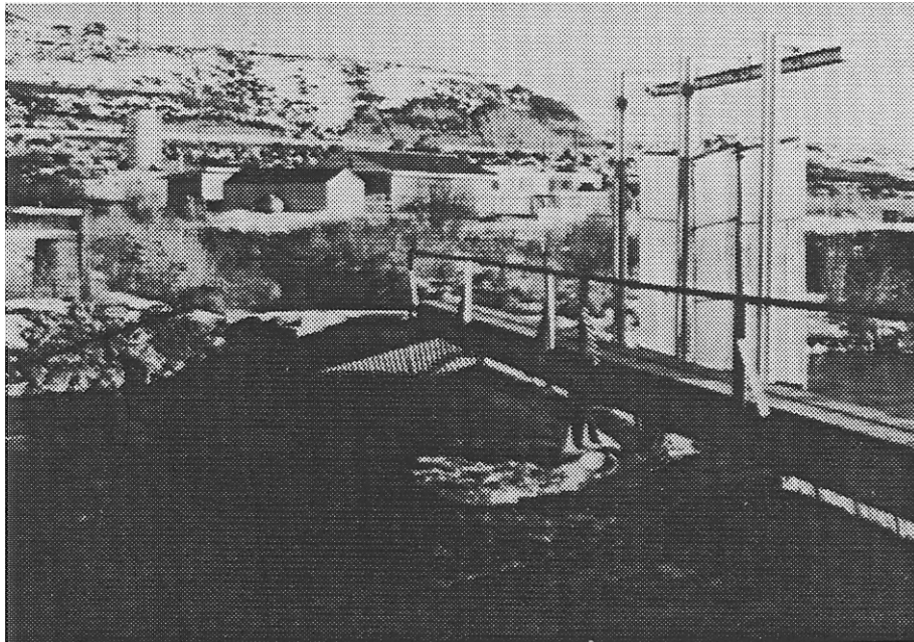




PAHSIMEROI FISH HATCHERY

1994 Summer Chinook Brood Year Report



by

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ABSTRACT

The Pahsimeroi Fish Hatchery trap was operational from June 12 until October 12, 1994. The first summer chinook salmon *Oncorhynchus tshawytscha* arrived on June 20, and the last arrived on September 24. The run consisted of 27 adults and nine jacks.

The male portion of the run consisted of 9 three-year olds(jacks) and 11 four-year olds, for a total of 20 males trapped. The females consisted of 15 four-year olds, and one five-year old, for a total of 16 females trapped.

All chinook trapped were released upstream of the weir to spawn naturally. The National Marine Fisheries Service guidelines for Brood Year 1994 called for the release of all unmarked chinook until the total number of chinook trapped exceeded 100. Only 36 chinook were trapped during the run, and the only marked fish trapped were males. Therefore, the entire chinook trapped were released, and no hatchery production of chinook salmon for brood year 1994 occurred.

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INTRODUCTION

Pahsimeroi Fish Hatchery is owned and funded by Idaho Power Company (IPC) and is operated by the Idaho Department of Fish and Game (Department). The summer chinook salmon *Oncorhynchus tshawytscha* and steelhead *Oncorhynchus mykiss* programs are mitigation for the IPC dams constructed on the Snake River in Hells Canyon. The hatchery is located near Ellis, Idaho; one mile upstream on the Pahsimeroi River, with the final chinook rearing ponds located at a separate facility seven miles upstream on the Pahsimeroi River.

OBJECTIVES

The objectives of the Pahsimeroi Fish Hatchery with respect to summer chinook are as follows:

1. To rear one million summer chinook smolts for release into the Pahsimeroi River.
2. To trap and spawn summer chinook adults returning to the Pahsimeroi River.

HATCHERY FACILITIES

There are two concrete adult holding pens and one adult trapping pond each measuring 15 ft X 75 ft X 4.5 ft deep. Adult fish of hatchery origin are held in these pens until they are spawned. The trap has a fish ladder in the structure, and a finger weir that keeps the fish from returning to the river. A 55 ft long weir crosses the Pahsimeroi River to direct fish up the attraction channel and into the trap.

The main hatchery site consists of two residences, two pump houses, a 10,000 gal water storage tank, a metal storage building, a cinder block office building with attached public restroom, incubator room containing 20 double stacks of Heath incubators, and a two-bedroom dormitory and workshop. Four concrete raceways (4 ft X 100 ft) are used for early rearing of salmon from the swim-up fry to fingerling stage of development.

Two dirt-rearing ponds (40 ft X 300 ft) are located seven miles above the trap at a separate site. These are used to rear chinook from fingerling to smolt. Facilities at the upper site include a large metal storage building, a small storage building, and a feed bin for storing dry bulk feed and a walk-in freezer for storing frozen salmon feed.

WATER SUPPLY

Water for the hatchery is supplied by the Pahsimeroi River, and varies in temperature from a low of 32° F during the winter to as high as 67° F in summer (Appendix A). River water is gravity fed through an intake diversion to the fish trap and four early rearing raceways. The river water has a high organic load during winter, but is quite clean during the summer months.

Incubation water consists of specific pathogen free (SPF) spring water, which is pumped to the 10,000 gal-holding tank, and gravity fed to the incubators. It can also be gravity fed to one early-rearing raceway. Its temperature varies from a low of 52° F in the winter to 55° F in the summer, and has a pH of 7.8. At swim-up, the fry are placed into the raceways containing the SPF spring water. This water is used until the chinook fry outgrow the space available in these raceways, at which time they may be trucked to other facilities for additional rearing time on SPF spring water, divided among all four raceways and supplied with river water, or trucked to the earthen rearing ponds.

SUMMER CHINOOK TRAPPING

Trapping for summer chinook started on June 12 and ended on October 12. (Appendices B, B-1). The first and last chinook salmon trapped arrived on June 20 and September 24, respectively.

The trap was sorted daily, and fish were measured for fork length using a modified measuring box containing a hose to provide water to the fish to ease stress and lessen any chance of injury during handling. All fish received an injection of erythromycin phosphate at a single dosage rate of 10 mg/kg body weight to reduce mortality from kidney disease. The run consisted of 27 adults and nine jacks for a total of 36 fish. The adults consisted of 11 males and 16 females. Seven of the nine jacks were marked. Six had adipose clips and one a left ventral (LV) clip. Only one of the adult males was marked, a 75 cm male with an adipose clip. None of the 1990 brood year chinook were marked with fin clips while at the Pahsimeroi Fish Hatchery, so hatchery personnel are assuming this fish was marked sometime after release.

Fork lengths were taken on all fish entering the trap (Appendices C, C-1). The age-class breakdown was done by length this year. All males 61 cm and under were classified as jacks. Male and female fish 62 cm through 82 cm were classified as four-year olds, and all fish 83 cm and over were classified as five-year olds. The male portion of the run was comprised of nine three-year olds, and 11 four-year olds. The female portion consisted of 15 four-year olds and one five-year old.

SUMMER CHINOOK RELEASES

All chinook trapped were released upstream of the weir to spawn naturally. None were retained for spawntaking purposes. The National Marine Fisheries Service guidelines for Brood Year 1994 called for the release of all unmarked chinook until the total number of chinook trapped exceeded 100. Only 36 chinook were trapped during the run, and the only marked fish trapped were males originating from brood year 1991, hence all the chinook trapped were released.

FISH HEALTH

Diseases Encountered and Treatment

Fish were not reared at this facility this year. A small group of cutthroat trout *Oncorhynchus clarki* was reared to test the well water system. Disease was not a factor in this fish.

Acute Losses

Not applicable this year.

Other Assessments

Pahsimeroi Fish Hatchery would benefit from a well water system for chinook rearing at both the upper and lower facilities. After the gas supersaturation is removed, the well water source is preferable to river water. Whirling disease is endemic to the Pahsimeroi River and can be controlled or "managed around" with a specific pathogen free water source. The ponds need to be renovated to eliminate tubificid worm interaction with rearing water and fish. By eliminating or minimizing contact with these worms that transfer *Myxobolus cerebralis* Pahsimeroi Fish Hatchery will produce a better fish.

HATCHERY IMPROVEMENTS

Idaho Power Personnel constructed and installed crowd racks for the male and female adult holding pens. The new racks are on rollers, making them easier to use than the older units. New galvanized grating covers for the water intake flumes in the bottom of the holding pens were also fabricated and installed. These units are lighter than the previous units and can be easily removed for cleaning.

A new spring water intake line was installed to the spawn-shed and early-rearing raceways. Two of the early-rearing raceways can now be supplied with SPF spring water for early rearing. An electric pump previously used to supply river water to the 10,000 gal tank was re-plumbed to supply SPF water to the same tank. In case of mechanical pump failure, hatchery personnel may now utilize the second pump. A SPF spring water supply manifold system was constructed and installed in the spawnshed, enabling hatchery personnel to water harden and rinse up to 16 buckets of eggs simultaneously.

A sound/moisture barrier was also installed in the spawnshed floor. This barrier can be raised for maximum protection from moisture and noise, or lowered for cleaning.

Hatchery personnel installed new keyways in the early rearing raceways. Now, the raceways may be subdivided into separate sections 25 ft in length. This will lead to better feeding efficiency and the ability to segregate different groups of fish for experimental purposes.

A chain-link storage area was constructed at the lower facility for storage of bulky, seldom used, or scraps materials.

Concrete sidewalks were installed around the crew's quarters, office, and manager's residence.

The hatchery computer was brought online with the Banyan Network. Hatchery personnel may now enter trapping summaries and payroll directly to the PC, and upload this information directly to headquarters. Additionally, hatchery personnel sends and receives mail quickly and efficiently via an electronic E-mail service, also available on Banyan.

STAFFING

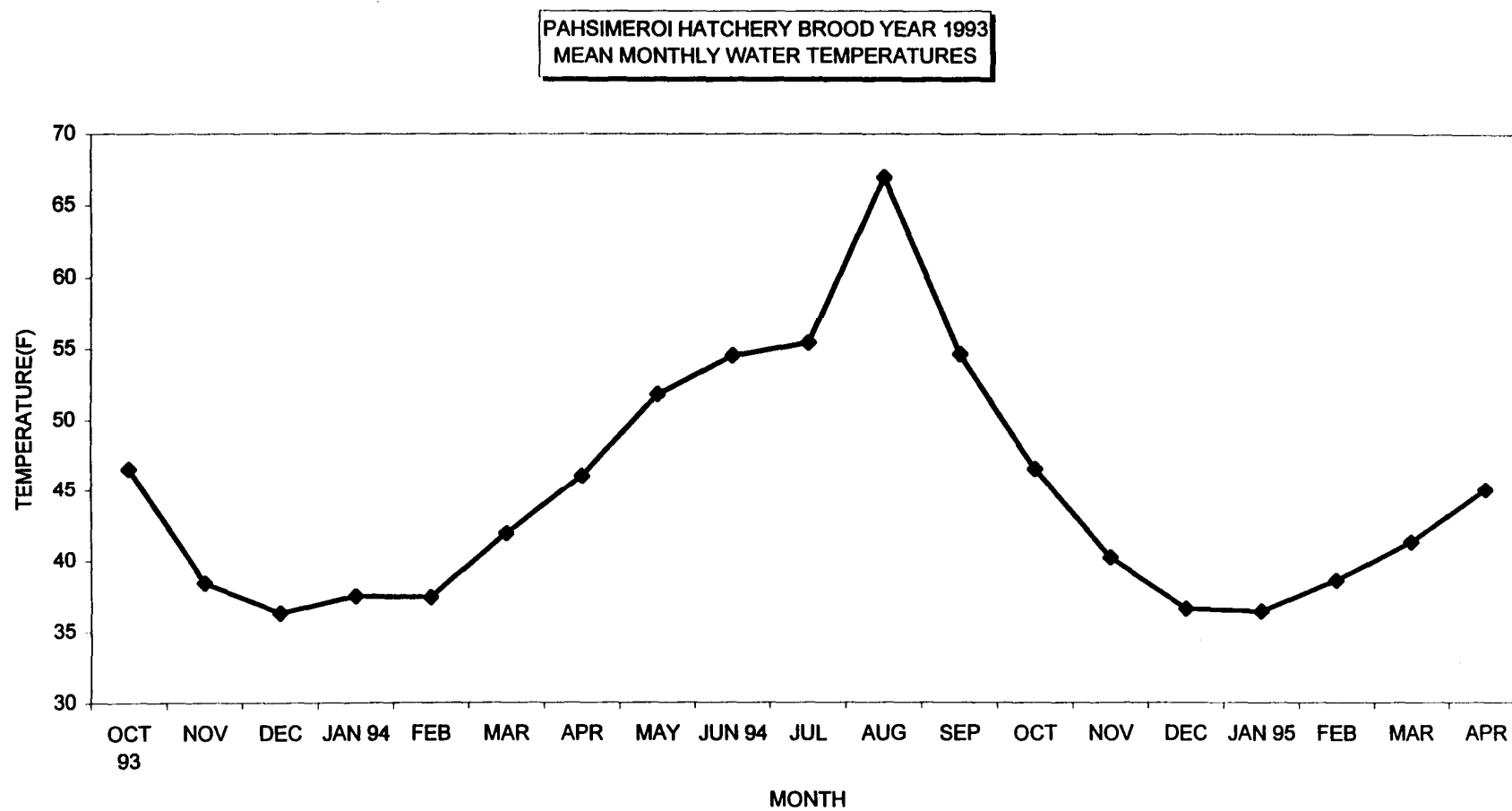
The hatchery is staffed with two permanent employees; a Hatchery Manager I, and an Assistant Hatchery Manager. Several temporaries are employed at various times of the year to help with the spawning of steelhead and salmon.

ACKNOWLEDGEMENTS

The crew at Pahsimeroi Fish Hatchery would like to express their appreciation to all those who helped with the spawning and transporting of steelhead and salmon. We would also like to thank Paul Abbott and the staff of Idaho Power Company for their continued help and support.

APPENDICES

Appendix A. Mean Monthly River Water Temperatures Graph.



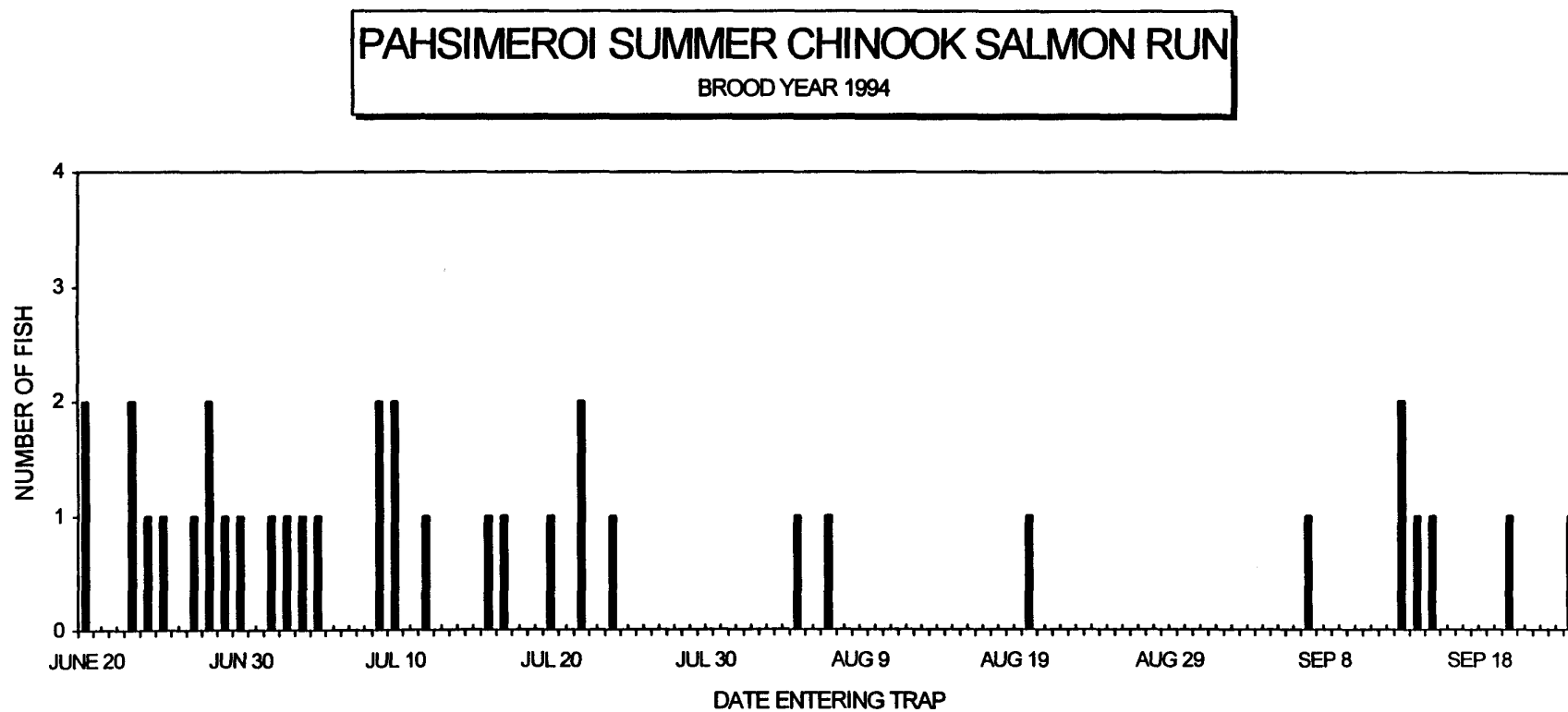
Appendix B. BY 1994 Summer Chinook Run Timing at Pahsimeroi Fish Hatchery.

DATE	TOTAL	JACKS	MALES	FEMALES
JUNE 20	2		1	1
21	0			
22	0			
23	2		1	1
24	1		1	
25	1			1
26	0			
27	1	1		
28	2	1		1
29	1			1
JUN 30	1			1
1	0			
2	1		1	
3	1		1	
4	1			1
5	1			1
6	0			
7	0			
8	0			
9	2			2
JUL 10	2	1	1	
11	0			
12	1			1
13	0			
14	0			
15	0			
16	1		1	
17	1			1
18	0			
19	0			
JUL 20	1	1		
21	0			
22	2		2	
23	0			
24	1			1
25	0			
26	0			
27	0			
28	0			
29	0			
JUL 30	0			
31	0			
AUG 1	0			
2	0			
3	0			
4	0			
5	1			1
6	0			
7	1		1	
8	0			

Appendix B. BY 1994 Summer Chinook Run Timing at Pahsimeroi Fish Hatchery.

DATE	TOTAL	JACKS	MALES	FEMALES
AUG 9	0			
10	0			
11	0			
12	0			
13	0			
14	0			
15	0			
16	0			
17	0			
18	0			
AUG 19	0			
20	1			1
21	0			
22	0			
23	0			
24	0			
25	0			
26	0			
27	0			
28	0			
AUG 29	0			
30	0			
31	0			
SEP 1	0			
2	0			
3	0			
4	0			
5	0			
6	0			
7	1	1		
SEP 8	0			
9	0			
10	0			
11	0			
12	0			
13	2	2		
14	1	1		
15	1	1		
16	0			
17	0			
SEP 18	0			
19	0			
20	1		1	
21	0			
22	0			
23	0			
24	1			1
TOTALS:	TOTAL 36	JACKS 9	MALES 11	FEMALES 16

Appendix B-1. Brood Year 1994 Adult Chinook Run Timing Graphic.



Appendix C. BY 1994 Adult Chinook Length Frequency Distribution at Pahsimeroi Fish Hatchery.

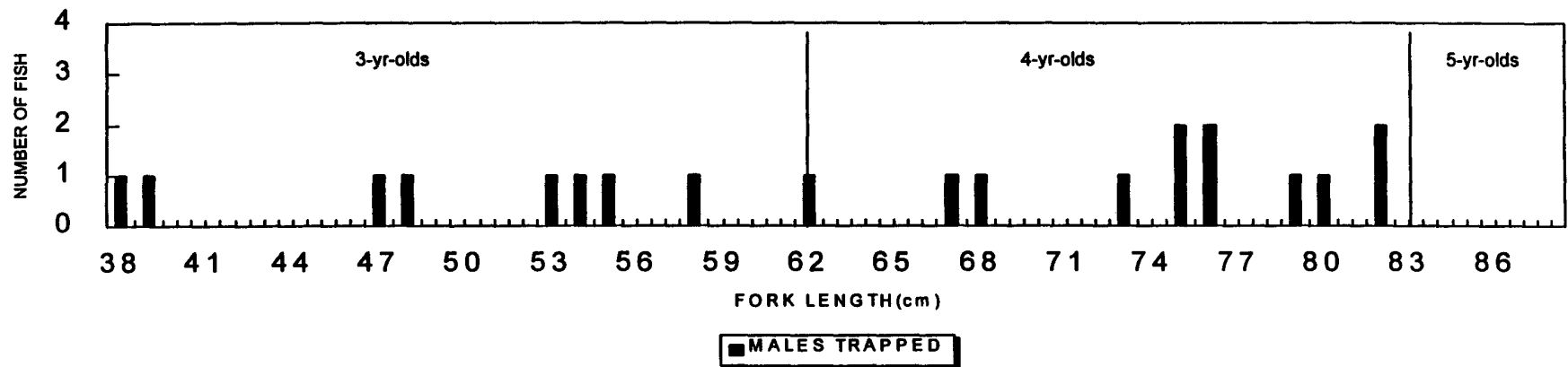
MALES TRAPPED			FEMALES TRAPPED		
LENGTH (INCHES)	LENGTH (CM)	NUMBER TRAPPED	LENGTH (INCHES)	LENGTH (CM)	NUMBER TRAPPED
15.0	38	1	15.0	38	0
15.4	39	1	15.4	39	0
15.7	40	0	15.7	40	0
16.1	41	0	16.1	41	0
16.5	42	0	16.5	42	0
16.9	43	0	16.9	43	0
17.3	44	0	17.3	44	0
17.7	45	0	17.7	45	0
18.1	46	0	18.1	46	0
18.5	47	1	18.5	47	0
18.9	48	1	18.9	48	0
19.3	49	0	19.3	49	0
19.7	50	0	19.7	50	0
20.1	51	0	20.1	51	0
20.5	52	0	20.5	52	0
20.9	53	1	20.9	53	0
21.3	54	1	21.3	54	0
21.7	55	1	21.7	55	0
22.0	56	0	22.0	56	0
22.4	57	0	22.4	57	0
22.8	58	1	22.8	58	0
23.2	59	0	23.2	59	0
23.6	60	0	23.6	60	0
24.0	61	0	24.0	61	0
24.4	62	1	24.4	62	0
24.8	63	0	24.8	63	0
25.2	64	0	25.2	64	0
25.6	65	0	25.6	65	1
26.0	66	0	26.0	66	0
26.4	67	1	26.4	67	0
26.8	68	1	26.8	68	0
27.2	69	0	27.2	69	0
27.6	70	0	27.6	70	1
28.0	71	0	28.0	71	3
28.3	72	0	28.3	72	1
28.7	73	1	28.7	73	3
29.1	74	0	29.1	74	1
29.5	75	2	29.5	75	0
29.9	76	2	29.9	76	0
30.3	77	0	30.3	77	0

Appendix C. BY 1994 Adult Chinook Length Frequency Distribution at Pahsimeroi Fish Hatchery.

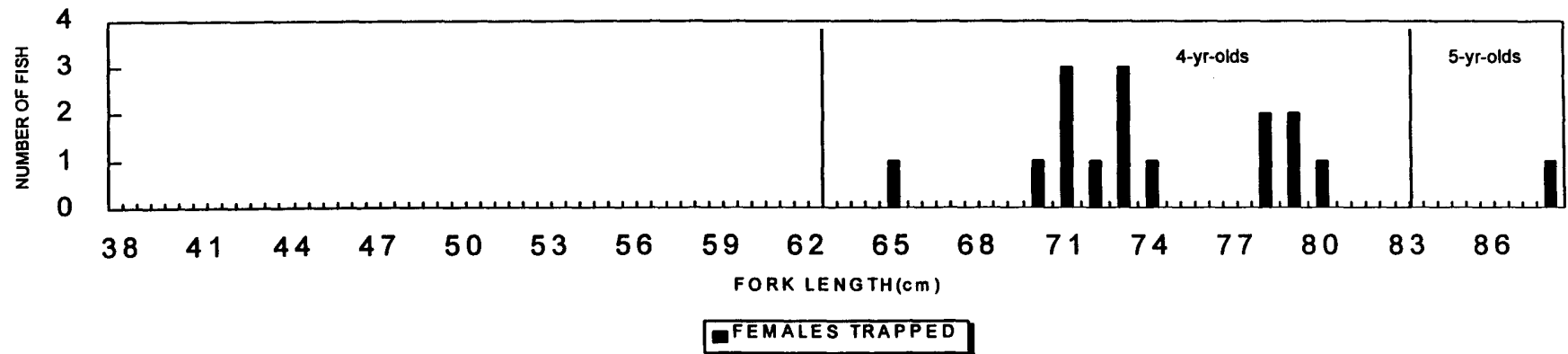
MALES TRAPPED			FEMALES TRAPPED		
LENGTH (INCHES)	LENGTH (CM)	NUMBER TRAPPED	LENGTH (INCHES)	LENGTH (CM)	NUMBER TRAPPED
30.7	78	0	30.7	78	2
31.1	79	1	31.1	79	2
31.5	80	1	31.5	80	1
31.9	81	0	31.9	81	0
32.3	82	2	32.3	82	0
32.7	83	0	32.7	83	0
33.1	84	0	33.1	84	0
33.5	85	0	33.5	85	0
33.9	86	0	33.9	86	0
34.3	87	0	34.3	87	0
34.6	88	0	34.6	88	1
TOTALS:		20			16

Appendix C-1. Brood Year 1994 Adult Chinook Length Frequency Graphics

LENGTH FREQUENCY SUMMER MALES-1994
PAHSIMEROI HATCHERY SUMMER CHINOOK



LENGTH FREQUENCY SUMMER FEMALES-1994
PAHSIMEROI HATCHERY SUMMER CHINOOK



Appendix D. Pahsimeroi Fish Hatchery chinook release and return information.

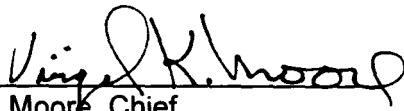
DATE RELEASED	NUMBER	3-YRS	4-YRS	5-YRS	TOTAL	YEAR OF RETURN	RETURN
MAY 1970	300000	89	N/A	101	N/A	71,72,73	N/A
MAY 1971	250000	40	425	14	479	72,73,74	0.192
MAY 1972	250000	20	138	76	234	73,74,75	0.094
MAY 1973	347000	1	5	32	38	74,75,76	0.011
MAY 1974	330000	8	189	436	633	75,76,77	0.192
MAY 1975	114000	53	115	X	X	76,77,78	X
MAY 1976	121000	7	X	32	X	77,78,79	X
MAY 1977	235000	X	0	4	X	78,79,80	X
MAY 1978	218000	1	29	13	43	79,80,81	0.020
MAR 1983	13690	11	72	30	113	84,85,86	0.825
APR 1984	55800	27	278	52	357	85,86,87	0.640
APR 1985	209155	37	408	716	1161	86,87,88	0.555
MAR 1986	12095	13	47	31	91	87,88,89	0.752
MAR 1987	258600	75	180	42	297	88,89,90	0.115
MAR 1988	598500	135	389	79	603	89,90,91	0.101
MAR 1989	1016300	39	139	27	205	90,91,92	0.020
MAR 1990	1058000	20	98	119	237	91,92,93	0.022
MAR 1991	227500	6	37	1	44	92,93,94	0.019
MAR 1992	605900	13	26	0	39	93,94,95	0.006
APR 1993	375000	7	73	8	88	94,95,96	0.023
APR 1994	130510	7	27	9	43	95,96,97	0.033
APR 1995	147429	5	60		65	96,97,98	
APR 1996	0 No 1994 Brood Year Production					n/a	
APR 1997	122017					98,99,2000	

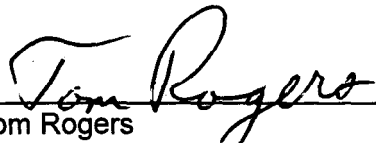
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